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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/982,845	10/22/2001	Takaharu Kondo	35.C15894	8377

5514 7590 07/30/2003

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EXAMINER

GEBREMARIAM, SAMUEL A

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/982,845

Applicant(s)

KONDO ET AL.

Examiner

Samuel A Gebremariam

Art Unit

2811

-- Th MAILING DATE of this communication appears on the cover sheet with the corresp ndenc address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-8, are rejected under 35 U.S.C. 103(a) as being anticipated by Sano US patent No. 6,211,454.

Regarding claim 1, Sano teaches (figs. 1 and 2) a silicon-based film comprising a crystal phase formed on a substrate (101) with a textured shape wherein the silicon-based film is formed on a substrate with a surface of the textured structure, the surface shape of the substrate is represented by a function  $f$ , wherein the silicon-based film is formed on a substrate with a surface shape having a standard deviation of an inclination  $\arctan(df/dx)$  from  $15^\circ$  to  $55^\circ$  within the range of a sampling length  $dx$  from 20 nm to 100 nm (fig. 2, col. 19, line 10- col. 20 line 2).

Since the structure taught by Sano is identical the claimed invention, a Raman scattering performed on Sano's structure would inherently result in a scattering strength resulting from an amorphous component in the silicon-based film that is not more than a Raman scattering strength resulting from a crystalline component, and a difference between a spacing in a direction parallel to a principal surface of the substrate and a spacing of single crystal silicon would be within the range of 0.2% to 1.0% with regard to the spacing of the single crystal silicon.

Regarding claim 2, Sano teaches the entire claimed structure of claim 1 above including the silicon-based film according to claim 1, comprises a crystal of a columnar structure in a thickness direction.

The limitation that the silicon-based film comprises a crystal of columnar structure depends on the substrate. Since the support substrate and silicon based film of Sano's structure are identical to the claimed structure it would inherently have a columnar structure in the thickness direction.

Regarding claim 3, Sano teaches the entire claimed structure of claim 1 above including the silicon-based film according to claim 1, a percentage of diffraction strength of (220) plane due to X-ray or electron beam diffraction is 30% or more of total diffraction strength.

The limitation that the silicon-based film have a percentage of diffraction strength of (220) plane due to X-ray or electron beam diffraction is 30% or more of a total diffraction strength depends on the silicon based film and the substrate. Since the

support substrate and silicon based film of Sano's structure are identical to the claimed structure it would inherently have x-ray diffraction results as claimed.

Regarding claims 4 and 5, Sano teaches the entire claimed structure of claim 1 above including the silicon-based film according to claim 1, is formed by a plasma CVD method using a high frequency wherein the high frequency is not less than 10 MHz but no more than 10 GHz (col. 11, lines 40-62).

Regarding claim 6, Sano teaches the entire claimed structure of claim 1 above including the silicon-based semiconductor layer having at least one pin junction on a support, wherein at least one i-type semiconductor layer comprises the silicon-based film as set forth in any one of claims 1 to 5 (col. 10, line 64- col. 11, line 24).

Regarding claim 7, Sano teaches the entire claimed structure of claim 1 above including the silicon-based semiconductor layer is formed on a substrate comprising at least a first transparent conductive layer (103) stacked on the support (101), and the first transparent conductive layer (101) has the surface shape textured as the substrate (col. 8 lines 10-15).

Regarding claim 8, Sano teaches (fig. 1) the entire claimed structure of claim 1 above including the support is a conductive support (col. 1, lines 8-27).

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

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**Conclusion**

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Admassu Gebremariam whose telephone number is 703 305 1913. The examiner can normally be reached on 8:00am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 305-7646. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Samuel Admassu Gebremariam  
July 28, 2003

Steven Loke  
Primary Examiner

